

WHAT IS CLAIMED IS:

1. A method for fabricating high-purity silica glass using a sol-gel processing, comprising the steps of:

5 (a) mixing deionized water with a fluorine compound and a dispersion agent to prepare an aqueous premix solution;

(b) mixing the aqueous premix solution with a fumed silica;

(c) mixing the resulting mixture to form a dispersed sol;

(d) aging the dispersed sol at the ambient temperature to stabilize silica particles;

10 and,

(e) removing air voids from the sol and adding a gelation agent.

15 2. The method of Claim 1, wherein the fluorine compound added in the preparation step (a) of the aqueous premix solution is NH_4F .

3. The method of Claim 1, wherein the fluorine compound added in the preparation step (a) of the aqueous premix solution is $(\text{NH}_4)\text{SiF}_6$.

20 4. The method of Claim 1, wherein the fluorine compound added in the preparation step (a) of the aqueous premix solution is HF .

[illegible][illegible]